



Long Term Complication after Petticoat Technique in Type B Aortic Dissection

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Abstract

We reported a case of complicated Type B aortic dissection treated by TEVAR and PETTICOAT technique. Angio-CT scan follow-up showed a complete false lumen thrombosis in most of the treated aorta with a residual short portion of dissected aorta at the renal level, however, the aortic diameter continued to expand. At 10 years follow-up the maximum aortic diameter was 76 mm. After open repair the patients died due to respiratory failure. This case shows how long-term PETTICOAT technique results may not protect patients from the aneurysm evolution of the aorta.

Keywords: Type B aortic dissection; Tevar; Petticoat technique

Introduction

The aim of endovascular treatment in Type B aortic dissections is to close the proximal entry tear and depressurizing the false lumen in order to improve aortic remodeling.

We find several endovascular techniques that can be taken into consideration to achieve false lumen thrombosis in case of reinterventions in chronic Type B aortic dissection [1].

Indeed in order to promote aortic remodeling in the acute Type B aortic dissection and to avoid follow-up reinterventions, some authors suggested the use of the provisional extension to induce complete attachment (PETTICOAT) technique. Unfortunately, this technique failed to demonstrate a reduction of aortic diameters at 2 years of follow-up [2].

The fate of patients in whom the uncovered stent (PETTICOAT Technique) was used is unknown.

We can report a clinical case with 10 years follow-up of PETTICOAT Technique.

Case Presentation

A 78-year-old male patient who underwent 10 years earlier a TEVAR + PETTICOAT technique for complicated Type B aortic dissection. Throughout the follow-up we observed a progressive increase in aortic diameters shown by annual CT scan. At 10 years follow-up the maximum aortic diameter had reached 76 mm, and we also observed a fracture of the uncovered stent ring

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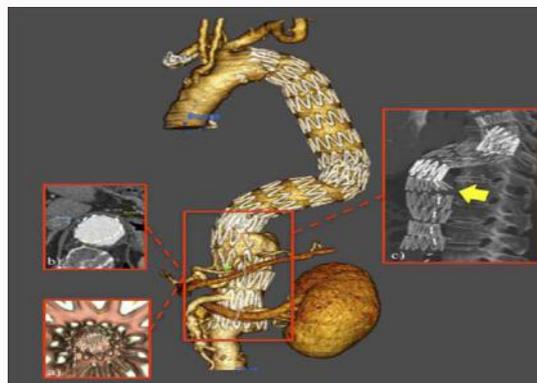


Figure 1: CT scan 10 years follow-up.

- a) Caudo-cranial virtual navigator.
- b) Maximum aortic diameter.
- c) Maximum Intensity Projection (MIP) showed the fracture of uncovered stents.

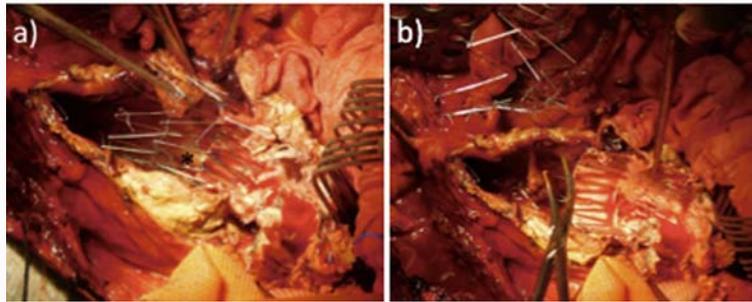


Figure 2: a) Uncovered stent fracture (*). b) Removed uncovered stent.

(Figure 1). In relation to the comorbidities and the presence of the PETTICOAT stent, an open repair was chosen. Through a thoraco-brake laparotomy at the VII intercostal space, the thoraco-abdominal aorta was surgically exposed. A femoral-femoral extracorporeal circulation was used, initially with a distal aortic warm reperfusion and, when the aneurysm was opened, a selective visceral and renal vessels perfusion was achieved. After proximal and distal aortic clamping, the aneurysm sac was opened only in its initial portion, and then a terminal-end anastomosis was performed with a straight Dacron prosthesis (30 mm diameter). At this point the aneurysm sac was completely opened, the stent was removed (Figure 2) and the straight prosthesis was anastomosed in suprarenal aorta (inclusion of visceral and renal vessels).

The post-operative course was characterized by a worsening of respiratory function and the patient died on the 15th postoperative day due to respiratory failure.

Discussion

We reported a case of complicated Type B aortic dissection treated by TEVAR and PETTICOAT technique.

Angio-CT scan follow-up showed a complete false lumen thrombosis in most of the treated aorta with a short segment of dissected aorta at the renal level; despite this early good result, during the follow-up the aortic diameter continued to expand.

This aspect should represent a point of reflection regarding the use of PETTICOAT Technique: It wouldn't seem to protect the dissected aorta by aneurysmal dilatation during the follow-up. For this reason, some authors proposed the use of a bare stent associated with the ballooning of dissected aorta in order to facilitate the attachment of the dissected lamella to the remaining part of the aortic wall [3].

Recently Melissano et al. showed a preliminary experience in this procedure achieving an excellent aortic remodeling; however these

patients had a short follow-up with a mean time of only 7.2 months. The authors observed no complications and the complete exclusion of the false lumen in all cases [4].

Even in our experience the false lumen was occluded and the stent was completely expanded without aortic ballooning. Unfortunately, during the follow-up, we observed a stent rupture associated with an aneurysmal evolution of treated aorta.

In patients with Type B aortic dissection who underwent endovascular treatment the key point is the long-term results. Unfortunately, despite the efficacy of the endovascular treatment, the aortic wall remains pathologic and can result in an aneurysmal evolution during long term follow-up.

In conclusion, the evolution of aortic remodeling in type B dissection remains an open issue. The new devices and endovascular technique can help to improve the aortic remodeling particularly in the long term follow-up.

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